The information content of the deferred tax valuation allowance: Evidence from VC backed IPO firms.

Abstract: I examine the accounting choices of startup firms in the period immediately prior to their initial public offering (IPO) regarding one specific account - the deferred tax valuation allowance. This is one of the largest accruals for these firms, on average 73% of assets, and given its forward looking nature, should contain significant information for firm investors at the time of the Initial Public Offering (IPO). I first find that the distribution of the allowance is essentially binary, with 14% of the firms recording no allowance, and 76% of the firms recording a 'full' allowance completely offsetting any deferred tax assets. I further find that this choice is almost entirely predicted by whether the firm reports a history of losses in the pre-IPO period. For firms with a net operating loss carryforward (NOL) and pre-tax loss in the period immediately prior to IPO the likelihood of recording a full allowance is approximately 90%. For profitable firms without an NOL, it is less than 1%. This reliance on historical performance is consistent with auditors ignoring manager expectations of future profitability when making the decision to record the allowance, and increased SEC monitoring around the IPO reducing the ability of firms to manage earnings. Finally, I find that the valuation allowance sends a strong negative signal for future operating performance and firm survival, consistent with the choice to record a full allowance reflecting firm fundamentals. The results stand in contrast to literature which argues IPO firm financial disclosures lack sufficient relevance and reliability to provide useful information to investors.

1. **Introduction**

Determining whether to invest in a startup firm about to conduct its initial public offering (IPO) presents unique challenges for potential investors. These firms are young, have limited operating histories, and are about to receive a sudden influx of capital that will substantially change the scale, and scope, of their operations. In addition, the prospectus filed immediately prior to the IPO is generally the only source of financial information available about the firm. This means that at a time when the firms' prospects are subject to a high amount of uncertainty, particularly as compared to non-IPO firms, investors have a more limited set of information to evaluate the firms' underlying fundamentals (e.g. Cohen and Dean 2005, Lewis 2008). They then have to rely more heavily on the audited financial information in the prospectus in order to make any projections of the future.

However, prior accounting literature disagrees as to the quality of the information in these pre-IPO financial statements, potentially making it difficult for investors to fully rely on it. On the one hand, some literature argues that the more limited information environment surrounding the IPO gives firm managers a greater opportunity to manage earnings (e.g. Teoh et al. 1998 a and b). It finds that managers take advantage of this opportunity and manipulate accruals in both the IPO and post-IPO periods (e.g. Chen et al 2013, Fedyk et al 2017, Ertimur et al 2017), significantly reducing the quality of the reported financial information.

Conversely, other literature argues that there is increased monitoring, both from the SEC and other outside parties, surrounding the IPO which causes firms to report conservatively in the pre-IPO period (e.g. Ball and Shivakumar 2008). This literature finds that rather than managing earnings upwards, abnormal accruals for IPO firms are actually negative, or zero, in the pre-IPO period (Venkataraman et al. 2008, Billings and Lewis 2015, Armstrong et al 2009). In effect, the increased monitoring induced by the IPO process removes the opportunity for managers to upwardly manage earnings, which may increase the quality of the reported financial information.

While the question of if, and how, IPO managers manage earnings is still being debated (e.g. Ertimur et al 2017), there has been surprisingly little research into how well the pre-IPO financial

disclosures predict actual operating performance. Given the limited information environment, and conflicting dynamics surrounding the reported information, establishing what, if any, information content is contained in the pre-IPO financials should then be particularly useful for firm investors. To help fill in this gap, I focus on the accounting choices made by IPO firms in regards to one specific account – the deferred tax valuation allowance.

I focus on the valuation allowance for two reasons. First, the choice of whether to record the allowance has very clear implications for future operating performance. Briefly, the valuation allowance is a negative accrual that reduces any deferred tax assets (DTA) to the amount that the firm expects it is 'more likely than not' will be realized in the future. Because these DTAs often represent deductions against future taxable income, the determination about whether to record the allowance is directly tied to whether the firm expects to generate sufficient taxable income to utilize the deductions. Therefore, if the allowance is recorded in a manner consistent with those expectations, it should send a strong negative signal about future performance.

Second, the accounting rules regarding the allowance make it susceptible to both of the previously discussed dynamics that affect reliability of the pre-IPO earnings. To see why, consider that the accounting standard requires that all available information about the past, current, and future periods be taken into account when making the valuation allowance decision (ASC 740). Information about the future will include managers' current expectations about future profitability (Miller and Skinner 1998), which means that the allowance will potentially reflect managers' private information about the future enhancing the signal value of the account. However, because these expectations are inherently hard to verify ex-ante, this also means the allowance allows for more discretion than other accruals. As a result, if the IPO does increase the opportunity for earnings management, the increased discretion will make the valuation allowance susceptible to bias.[1] In that case, any information content would be reduced.

[1] The majority of prior literature into the valuation allowance choices of non-IPO firms is predicated on the idea that increased management discretion, and incorporation of future expectations, makes it particularly susceptible to earnings management (e.g. Frank & Rego 2006).

Alternatively, if the increased monitoring surrounding the IPO reduces the opportunity of firms to manage earnings, this should reduce the bias in the valuation allowance. In particular, it should cause auditors to discount managers' expectations of future profits when making the decision to record the allowance (Bauman and Das 2004). While this does reduce the potential for earnings management, it also reduces the potential signal value. If the firm's prospects change substantially after the offering, then ignoring managers expectations, could lead to an over-provision of the allowance. That would require a reversal in future periods, again reducing the information conveyed by the account.

To shed further light on these competing dynamics, I examine a sample of 1,217 firms that received venture-capital financing and conducted their IPO between 1997 and 2014. 91% of these firms report an accumulated net operating loss (NOL) in the year immediately prior to the IPO. The NOL can be carried forward to reduce taxable income, and associated tax liability, up to 20 years in the future. For the vast majority of these firms this deferred benefit is by far the largest DTA – on average 65% of the total. This means that any choices related to establishment of the allowance will be driven by expectations over utilization of the NOL carryforward, as opposed to other DTAs.

I first find that 87% of the firms record a valuation allowance. This allowance is, on average, 73% of total assets making it one of the largest single accruals on the financial statements. I further, unsurprisingly, find that the magnitude of the NOL benefit, magnitude of the deferred tax liability (DTL), and recent operating profitability strongly predict its magnitude. What is surprising, is that the choice to record the valuation allowance is not whether to record any allowance – but whether to record a 'full' allowance completely eliminating any deferred tax benefits, or none at all. 74% of the firms record a full allowance and 14% recording no allowance. This is particularly striking because if recorded correctly, the full allowance sends the signal that the vast majority of these firms are conducting the IPO with a greater than 50% likelihood that they will generate no taxable income for the foreseeable future.

When I examine the choice to record a full allowance further I find that it is driven by two factors: whether the firm has generated an accumulated NOL, and whether it reports pre-tax profitability in the year immediately prior to the IPO. If an IPO firm has an NOL carryforward the likelihood of

recording a full allowance is 76% vs. 15% for no NOL firms. However, if the NOL firm has a pre-tax profit in the year prior to IPO the likelihood of recording a full allowance is only 28%. If it has a pre-tax loss then the likelihood is over 90%. Essentially the only way an NOL firm can avoid recording a full allowance against the deferred tax benefit from the NOL carryforward, is if it has already started using the carryforward.

These results are consistent both with increased monitoring around the IPO causing firms to report conservatively, and anecdotal evidence that auditors do not allow manager expectations to be incorporated into the decision to record valuation allowance when a firm has a history of losses (Bauman & Das 2004). Indeed, practitioner literature, and my own conversations, indicate that IPO firms that have never reported a profit will almost always be required to record a full allowance. As mentioned earlier, this approach reduces the opportunity for managers to use the allowance as an earnings management tool, but it also potentially eliminates any signal value of the account. In that case, the auditor approach, which is influenced by increased SEC oversight, would hurt IPO investors by removing the potentially forward looking information.

To see if this is the case I examine whether establishment of the allowance predicts future performance. I find that allowance sends a strong negative signal for future income for up to three years in the future. In particular, a full allowance is associated with future ROA that is 23%-29% lower than if the firm recorded no allowance. I further find, consistent with the strong negative signal implied by the full allowance, Full Allowance Firms are significantly more likely to fail Non-Full Allowance Firms - 24% vs. 13%. This suggests that the audit approach to the valuation allowance is generally correct, and the account does have significant information for firm investors.

In summary my results show the following. The decision faced by IPO firms with DTAs is not whether to record any valuation allowance, but whether to record a full or zero allowance. The vast majority record a full allowance and this treatment is driven almost exclusively by current and past lost status. Essentially, if a firm has a history of losses, the only piece of positive evidence an auditor will consider is current profitability when making the decision to record an allowance. Expectations of future

profitability do not appear to be taken into account. However, the treatment does appear to be, on average, correct as establishment of a full valuation allowance sends a strong negative signal for future economic performance. The evidence is consistent with increased SEC oversight causing auditors to rely exclusively on negative past evidence when making the decision to record the allowance, and that this treatment increases the information content of the account for firm investors.

My study makes several contributions to the literature. First, the fact that the deferred tax valuation allowance contains significant incremental information for future operating performance calls into question the contention (e.g. Kim and Ritter 1999) that the pre-IPO financial disclosures are too unreliable to provide useful information to IPO investors. Indeed, the results suggest that it is one of the strongest predictors for future performance available to investors in the pre-IPO period. The fact that the choice to record the allowance is almost entirely driven by past historical performance also suggests that even though the IPO will substantially change the firms' operations, their pre-IPO fundamentals, at least in regards to operating losses, still persist.

Second, the prevalence of the full allowance provides support for the literature claiming that IPO firms do not upwardly manage earnings in pre-IPO financial disclosures (e.g. Ball & Shivakumar 2008). In addition, these studies typically utilize working capital accrual models to test the level of conservatism or earnings management of the firms. My results suggest that these measures may understate the results in these papers as they omit the valuation allowance which, for NOL firms in particular, completely dominates any other accrual on the balance sheet in terms of magnitude.

Finally, I also contribute to the more general literature regarding the deferred tax valuation allowance. My sample is composed of IPO firms, a group that has been ignored by previous research into the accrual. I show that, despite the confounding incentives surrounding the IPO, the firms appear to record the allowance in a manner that reflects their true fundamentals. This supports research (Dhaliwal et al 2013) that shows the income tax disclosures can provide information about loss firms' future prospects. It also supports the literature that finds minimal evidence of the allowance's use as a tool of future

earnings management (e.g. Christensen et al 2008), and suggests that managers may have relatively less discretion when recording it than has been previously proposed.

The paper proceeds as follows. Section 2 documents the prior literature and hypothesis development. Section 3 documents the research design and Section 4 the data and sample construction. Section 5 documents the results and section 6 concludes.

2. Prior literature

I begin with a brief overview of the research into the accounting choices of IPO firms. I then discuss the deferred tax valuation allowance, and how the dynamics of the IPO may affect the information conveyed by its establishment.

Initial Public Offering

In the period immediately prior to its initial public offering (IPO) a firm must submit a prospectus to the SEC detailing its business strategy, description of operations, and up to three years of audited historical financial information. Because this is generally the only publicly available information regarding the firm's finances, potential investors have a much more limited information environment in which to evaluate their future prospects. As a result, there is a substantial accounting and finance literature investigating the quality of the information contained in these disclosures.

The core assumption in prior literature is that the IPO is sufficiently unique that it will cause the relevance and reliability of the reported earnings to be substantially different than those of non-IPO firms. In terms of relevance, there is a general perception that the IPO itself is such a transformative event that the pre-IPO financial will have limited usefulness in predicting post-IPO performance (Kim and Ritter 1999, Ritter and Welch 2002, Jain and Kini 2000).This means potential investors will have to look elsewhere for other, more forward looking, information when evaluating a firms prospects, causing the uncertainty surrounding the value of the IPO firm to increase.

In terms of the reliability, there is still a substantial debate. Most literature generally accepts that there is a higher opportunity to manage earnings in the pre-IPO period due to increased information asymmetry and lack of a time-series against which to evaluate the firm financial disclosures. In favor of

managers taking advantage of this opportunity, some literature finds that IPO firms use pre-IPO accruals to manage earnings upwards in both pre and post-IPO periods *(*Teoh et al. 1998 a & b, Jain and Kinni 1994, Chen et al 2013, Fedyk et al 2016, Ertimur et al 2017). This result is often used to explain the aforementioned lack of relevance of pre-IPO financial information.

On the other hand, there is a competing literature which contends the uncertainty and increased litigation risk surrounding the IPO not only cause managers to forgo the increased opportunity to manage earnings, but may also incentivize them to be conservative (e.g. Venkataraman et al. 2008). In support of this view, prior literature (e.g. Ball & Shivakumar 2008, Billings and Lewis 2015, Armstrong et al 2009) finds that in the period immediately prior to IPO firms' abnormal accruals are, on average, negative or zero. In effect, increased monitoring removes the opportunity for firms to upwardly manage earnings in the pre-IPO period.

In summary, the prior literature is generally predicated upon the idea that IPO firms are sufficiently unique so that the information conveyed by their pre-IPO disclosures is significantly different from similar disclosures of non-IPO firms. These differences have often been assumed to make pre-IPO financial disclosures less relevant and reliable than those of non-IPO firms. This lack of relevance and reliability is contended to explain why pre-IPO earnings have such little predictive power for IPO valuation. Most of the prior accounting literature has contended that IPO managers either upwardly manage earnings or are more conservative in the periods around the IPO, but with few exceptions (most notably Demers and Joos 2007), there has been relatively little research directly examining the information contained in pre-IPO accounting disclosures for future financial performance, and almost no research into the pre-IPO tax disclosures of these firms (Bauman and Das 2004 being a notable exception).

Deferred tax valuation allowance for IPO firms.

To examine the effect of these competing dynamics on the information content of pre-IPO financial disclosures, I elect to focus on one specific account – the deferred tax valuation allowance. Specifically, I

examine what factors determine whether a firm records the allowance, and whether its establishment has any information for a firm's future prospects.

The tax law determines taxable income and there are key differences from GAAP, particularly in the timing of deductions. As a result book and taxable income will rarely be equal and, in extreme cases, it is even possible to report a profit under one standard and a loss under the other. The differences between the two measures are classified as either "permanent" or "temporary." Permanent differences never reverse and are composed of non-taxable revenue (e.g. municipal bond interest) and non-deductible expenses (e.g. excess executive compensation). Temporary differences represent timing variations on items allowed for both book and tax (e.g. accelerated depreciation allowed under income tax law) whose treatment will eventually converge.

One of the largest temporary differences occurs when a firm's total deductions in a given year exceed taxable revenues. As taxable income cannot be lower than zero, this results in a net operating loss (NOL) for which a carryback of two years, and carryforward of 20 years is allowed to reduce taxable income.[2] This means that for years in which the NOL carryforward (or carryback) is applied, the actual cash taxes paid by the firm will be substantially lower than they would without the additional deduction. For example, if a firm incurs a NOL of $100 in year 1, and generates taxable income of $150 in year 2, they can apply the $100 year 1 loss against year 2 income reducing taxable income to $50. Assuming the firm is subject to a marginal tax rate of 30 percent, the application of the carryforward reduces the year 2 taxes paid by the firm from $45 ($150 * 30%) to $15 ($50 * 30%). The potential $30 benefit will be accrued as a deferred tax asset in year 1, the year the NOL is incurred.

Given that these assets can be substantial, and it may be many years before ultimate realization, firms are required to record a valuation allowance reducing the asset to its estimated net realizable value if it is 'more likely than not' that a portion will not be realized. Therefore, if a firm determines that it will

[2] This period applies to federal NOLs. State and foreign NOLs will be subject to the rules of their applicable jurisdictions.

not be sufficiently profitable to utilize the carryforward in future years, it will significantly reduce, or even eliminate, the deferred tax asset recorded on its books.

The key thing to emphasize is that the accounting standard requires that the firm incorporate all available information about current, past, and future periods, which can include managements' expectations about future taxable income, when making the determination of whether to record an allowance (ASC 740). The role of management's future expectations in the accrual determination (which are difficult to verify ex-ante) means the allowance is considered to be subject to a greater amount of discretion than other accruals (Hanlon & Heitzman 2010, Frank & Rego 2006). It also means that it is one of the few explicitly forward looking accruals on an IPO firm's balance sheet, and as such may be particularly useful for firm investors as they try to ascertain the firm's future prospects.

That said, while prior research suggests that the allowance contains information about the future performance of non-IPO firms (Miller and Skinner 1998, Behn et al 1998, Jung and Pulliam 2006, Dhaliwal et al 2013), there are several reasons why the relationship could be significantly changed by the dynamics of the IPO discussed in the previous section. First, the uncertainty and transformative nature of the IPO could cause the managers to have less precise expectations of future income, especially when compared to the non-IPO firms that are the focus of prior literature. If the error in the estimates is large enough, then the expected negative relationship may not be evident.

Second, if IPO managers are more likely to manage earnings, than the discretion inherent in the accrual makes it a prime management tool. If it is used to manage current earnings upwards then the allowance recorded in the pre-IPO period will be lower than the level required by the firm's fundamentals. This will necessitate the establishment of a larger allowance in a future period to bring the balance to the 'correct' level, reducing future earnings. Alternatively, the allowance could be used to create a reserve that would allow firms to manage future earnings. In this case, while the establishment of the allowance in the pre-IPO period would reduce current earnings, its reversal would increase earnings in future periods. In both situations, the reversal would cause a reduction in the predictive power of allowance for future performance.

Third, the increased monitoring and litigation risk surrouding the IPO could increase the likelihood of the firms recording the allowance. Specifically, it could cause auditors to ignore expectations of future taxable income when the firm reports a history of losses. This possibility is explicitly mentioned in the standard when it says *"The more negative evidence that exisits…the more difficult it is to support a conclusion that a valuation allowance is not needed for some portion…of the deferred tax asset. A cumulative loss in recent years is a significant piece of negative evidence that is difficult to overcome."* (ASC 740 30-23).

Anecdotal evidence, and practitioner guidance suggests that the auditors of these firms will take an approach which gives more weight to historical information when making the valuation allowance determination (Bauman and Das 2004). For example, the 2009 audit guide issued by PricewaterhouseCoopers, states:

> *A projection of future taxable income is inherantly subjective and generally will not be sufficient to overcome negative evidence that includes cumulative losses in recent years* (page 126).[3]

This could have two effects on the relevence and reliability issues inherant in IPO financial disclosures. First, the perceived lack of relevance will be exacerbated due to the exclusive reliance on historical financial information. Second, the reliability of the disclosure increase if the audit approach significantly reduces the ability of the manager to upwardly manage pre-IPO earnings by removing their discretion from the decision. However, this removal of managerial discretion could also lead to an overly conservative provision of the allowance, which would have to be reversed in the future lowering the information content of the accrual.

In summary, the deferred tax valuation allowance will be affected by all of the factors contended to make it difficult to evaluate IPO firm financial disclosures. As a result, determining what information it

[3] This attitude was confirmed with my own interviews with Big 4 audit partners, and a lawyer for venture capital firms. The consensus audit approach is that if a firm exhibits a history of losses in the recent past, then the auditor will record a substantial, or full, valuation allowance. Any projections of future taxable income are given little weight in the evaluation.

conveys will not only inform firm investors, it will help shed some light on the prior literature into the relevance and reliability of pre-IPO financial information.

3. Research design

Determinants of the magnitude of the valuation allowance

I first investigate whether pre-IPO financial characteristics are associated with the allowances' magnitude. If the magnitude of the allowance is not associated with the fundamentals of the firm, this could either reflect that managers are opportunistically recording the accrual, or that the IPO will so fundamentally transform the firm that the establishment of the accrual purely reflects future expectations.

To conduct this test I use the following empirical specification:

$$(VALALLOW/DTA)_t = \alpha_0 + \beta_1(DTL/DTA)_t + \beta_2(NOL/DTA)_t + \beta_3 ROA_t + \beta_4(READJ/ASSETS)_t + \beta_k INDUST + \beta_j YEAR + \varepsilon_t \ , \quad (1).$$

Year t is the last fiscal year prior to IPO.

Consistent with prior literature, my dependent variable is the valuation allowance divided by the gross deferred tax asset - $\left(\frac{VALALLOW}{DTA}\right)_t$. My independent variables capture the dynamics shown to predict the magnitude of the allowance in non-IPO settings. First, I include the relative size of the deferred tax liability to the deferred tax asset - $(\frac{DTL}{DTA})_t$. If a firm has temporary differences that result in financial statement income being higher than taxable income for a given period, they must record a deferred tax liability that reflects the estimated future taxes due. As noted by Behn et al. (1998), since the DTA represents future tax deductions, and the DTL represents future taxable income, the larger the DTL in relation to the DTA, the greater the likelihood that the firm should be able to generate sufficient taxable income to utilize the DTAs. As such, I predict that the deferred tax liability will be negatively related to the magnitude of the allowance.

Second, the size of the deferred tax benefit from the NOL relative to the gross deferred tax asset – $(\frac{NOL}{DTA})_t$ (e.g. Miller and Skinner 1998). The greater the magnitude of the NOL the higher the amount of

taxable income needed in the future to utilize the benefit. Therefore, there is a higher level of uncertainty over the firm's ability to utilize the deduction, so the higher the likelihood it will establish an allowance. Given the substantial magnitude of NOLs generated by IPO firms (Allen et al 2018) for my sample firms I predict this to be a particularly strong predictor.

The final piece of historical financial information included by prior research is prior operating performance. This is usually some measure of the average operating income over the prior two to three years, sometimes including the current period (Behn et al. 1998, Christensen et al. 2008, Frank and Rego 2006) and sometimes not (Miller and Skinner 1998). Prior literature has found that the higher the recent operating performance, the lower the magnitude of, or increase in, the allowance. To capture this dynamic I include two variables. First, current period income (ROA_t).[4] If current profitability persists in to the post-IPO period, then this variable will be negatively associated with the magnitude of the allowance.

Second the magnitude of accumulated retained earnings in the year prior to the year immediately prior to the IPO ($(READJ/ASSETS)_t$). Ideally I would have some measure of the prior three years worth of profits, but given the spotty coverage of all financial variables in COMPUSTAT for years prior to the immediate IPO year this is not possible. Rather I calculate a proxy for this information by taking the year t retained earnings (RE) and subtracting the current period net income. I then subtract the net DTA/(DTL) at the end of year t, and treasury stock balance (TSTK), in order to isolate the accumulated profit or loss status leading up to year t. This should be negatively related to the magnitude of the allowance as the greater prior profitability, the greater the likelihood the firm will generate sufficient future income to utilize the NOL carryforward. Finally I include indicators for 2-digit SIC code (*INDUST*) and fiscal year *(YEAR*).

[4] I scale by total end-of-the-year, rather than average or beginning-of-the-year assets for two reasons. First, as mentioned earlier, for the majority of my sample, COMPUSTAT does not consistently provide data for year t-1 (the fiscal year prior to the fiscal year prior to IPO).

Signal for future operating performance

I next directly examine the relationship between the valuation allowance and future performance. As mentioned earlier, if the IPO fundamentally changes the prospects of the firm, then exclusively relying on past operating performance to record the accrual may remove any potential information content it may have for the future. Alternatively, if the firms are using it as an earnings management tool, the prevalence of the full allowance means that it is being set up as a reserve to increase earnings in the future, as opposed to the pre-IPO period. In that case the subsequent reversal would increase future earnings, and reduce the negative signal conveyed by the allowances establishment.

The test is performed using the following empirical specification:

$$ROA_{t+k} = \alpha_0 + \beta_1 \left(\frac{VALALLOW}{DTA}\right)_t + \beta_2 ROA_t + \beta_3 \ln(ASSETS_t) + \beta_k INDUST + \beta_j YEAR + \varepsilon \quad (2).$$

My dependent variable is pre-tax return on assets ($ROA_{t+k,}$) over the subsequent three years. [5] [6] My main variable of interest is the magnitude of the valuation allowance -$\left(\frac{VALALLOW}{DTA}\right)_t$. I predict that the magnitude of the allowance should be negatively related to future income in all periods.

I also include two additional control variables to capture the operation characteristics of the individual firms. First, I control for the firms current profitability - ROA_t. Consistent with prior research, I predict that the current earnings will be persistent, and positively related to future earnings. I also control for firm size, $\ln(ASSETS_t)$, to reflect the smaller nature of the firms that record a valuation allowance. As larger firms are generally more profitable I expect the coefficient to be positive.

4. Data and Sample Selection

Sample selection

Given the substantial hand collection involved in obtaining the valuation allowance information, I focus on a sub-sample of firms that receive venture-capital (VC) financing and conducted their IPO between

[5] Similar to Dhaliwal et al., I chose three years in the future because it is a short enough horizon for meaningful estimates, and not so far in the future to render any estimates meaningless.
[6] My results are consistent using other measures of future performance including operating cash flows, and accumulated future income over the subsequent three years.

1/1/1997 and 6/30/2014. I choose this sub-sample they are concentrated in technologically intensive industries and generate substantial tax losses (Allen et al 2018). Therefore, they are highly likely to have to make the determination of whether to record a valuation allowance in the period prior to IPO. In addition, they are also substantially more likely to survive after the IPO than non-VC backed firms (Puri and Zarutski 2012, Morse and Allen 2016) and have higher quality accounting (Morsfield and Tan 2006).[7] Given their higher quality and 'importance', this means that if I am unable to find information content in the allowance for these firms, it is unlikely to be there for non VC-backed IPO firms either. I begin the sample period in 1997 due to the limited availability of electronically filed prospectuses on the EDGAR database prior to that year. I end the sample in 2014 to ensure there is sufficient future performance information available for testing.

From the Thomson Financial Services Database (SDC), I select VC-backed firms that conduct an IPO on a U.S. exchange during the sample period which results in an initial sample of 1,561 firms. From the SDC database, I obtain each firm's name, CUSIP, and stock issue date. I use the CUSIP to match firms with their financial records in the COMPUSTAT fundamental annuals database. I remove all firms incorporated outside of the U.S. as they will be subject to different rules regarding the carry-forward of NOLs. I further eliminate all firms that do not have the prospectus electronically available on EDGAR. From the prospectus I hand-collect the gross deferred tax asset (*DTA*), gross deferred tax liability (*DTL*), amount of the deferred tax asset associated with the NOL (*NOL*), and magnitude of the valuation allowance (*VALALLOW*) for the last audited fiscal year prior to IPO. All other variables are obtained from COMPUSTAT. I then remove all firms that are organized as a pass-through entity immediately prior to the IPO; that could not be linked to COMPUSTAT; and those missing any of the required variables for analysis.[8] This leaves 1,217 firms with sufficient detail available for testing.

[7] In untabulated results, I collect a small random sample of non-VC backed IPO firms and find generally the same results. The main difference is that sample of firms is generally smaller, and less concentrated in tech-based industries.

[8] I only require the firms have one-year head future income to remain in the sample. As shown later, requiring any more than that would substantially reduce the sample size.

Descriptive statistics

Table 1 Panel A presents the descriptive statistics for the sample as a whole. Consistent with prior literature (Allen et al 2018), these firms overwhelmingly report a NOL in the year immediately prior to IPO ($NOLFIRM_t$) – 91%. Only 22% of the firms report pre-tax profits ($PROFIT$). The deferred benefit associated with the NOL carryforward is substantial both as a percentage of the total DTA - ($\frac{NOL}{DTA}$) on average 65%, and total assets - ($\frac{NOL}{ASSETS}$) of 58%. This confirms that the majority of the decision to record a valuation allowance should be heavily influences by expectations over utilization of the NOL carryforward. Consistent with these firms poor operating history, 87% record a valuation allowance (*ALLOWANCE)*. The allowance is substantial, on average 73% of all other assets on the balance sheet (*VALALLOW/ASSETS)*. This magnitude confirms the importance of examining the information conveyed by the account.

Figure 1 Panel A gives the distribution of the valuation allowance and immediately I find a striking result. The distribution of the allowance is essentially binary, with 74% of the firms recording an allowance that completely eliminates the net deferred tax asset[9], and 15% of the firms recording a zero allowance. This relationship is further emphasized in Panel B which shows the same distribution, but this time as a Q-Q plot. This is surprising given the long period of time the firm has to utilize the carryforward, this distribution implies that the vast majority of these are conducting their IPO with the expectation they will cease operations without generating any taxable income. This directly contradicts the presumed incentives of IPO managers to maximize the value of the offer shares (Brau and Fawcett 2006), and may support the idea that one of the other dynamics reducing the quality of IPO firm financials may be influencing the choice.

[9] To be consistent with prior literature (e.g. Miller and Skinner 1998) I show the distribution of the valuation allowance as a percentage of the gross deferred tax asset. However, for all but a handful of firms, the valuation allowance is actually applied against the net DTA (the deferred tax asset minus the deferred tax liability). Since many of these firms have at least nominal DTL's the full allowances actually have a valuation allowance less than 100% of the gross DTA. As shown later, the valuation allowance for these firms is approximately 97% of the gross DTA.

Table 2 Panel B shows the descriptive statistics for the variables used in the analysis partitioned between full allowance and all other firms.[10] When I examine the deferred tax variables, the relationships are as expected. The valuation allowance is, on average, larger for the Full Allowance firms as a percentage of gross deferred tax assets DTA (*VALALLOW/DTA* of 0.97 vs. 0.29).The Full Allowance firms Aalso have larger tax benefits associated with the NOL (*NOL/DTA* of 0.74 vs. 0.34) and the deferred tax liability makes up a smaller part of the net deferred tax asset (*DTL/DTA* of 0.03 vs. 0.70). [11]

When I examine the operational characteristics of the firms, I unsurprisingly find significant differences. First, the Full Allowance firms are significantly smaller (ln(*ASSETS*) of $3.089 million compared to $4.142 million). Second, when I examine the differences in performance of the two groups, there is preliminary evidence consistent with the allowance sending a negative signal for future performance. The Full Allowance firms are significantly less likely to report a pre-tax profit (*PROFIT* of 6% vs. 71%) in the year prior to IPO, and are significantly more likely to report an NOL (*NOLFIRM* of 99% vs. 66%). This corresponds with lower current (*ROA* of -0.73 vs. 0.00) and past profitability (*READJ/ASSETS* of -1.71 vs. -0.42). Consistent with the allowance sending a negative signal for future income, future ROA is also consistently lower for the subsequent three years.

To summarize, the univariate analysis indicates that IPO firms overwhelmingly record a full or zero valuation allowance. The Full Allowance firms generate substantially larger losses prior to IPO, and these losses persist in the future. This provides preliminary support for the contention that the valuation allowance sends a strong negative signal for future performance.

5. Testing and Results

Determinants of the magnitude of the valuation allowance.

[10] In untabulated results I partition the sample into three groups – full, partial, and zero valuation allowance. As the partial allowance firms are, on average, not significantly different that the zero allowance firms for the majority of the non-deferred tax variables, I combine those groups together in order to ease the presentation of results.

[11] These statistics also illustrate the substantial difference in my sample compared to other papers investigating the valuation allowance. For example, if I compare my entire sample to Miller and Skinner (1998) I find that my firms record substantially larger DTAs as a percentage of total assets (mean of 0.62 vs. 0.11). They also generate substantially larger NOLs (mean 0.64 of total DTA vs. 0.14), and record larger allowances, (mean of 0.78 of the gross DTA vs. 0.12).

Table 4 presents the results of the test of the determinants of the magnitude of the valuation allowance. Column 1 shows the results for the full sample, column 2 shows firms that record a partial or full valuation allowance, and column 3 removes firms that record a full allowance. As expected, the magnitude of the NOL benefit is positively related to the magnitude of the allowance, and the DTL and operating performance are negatively related. These variables also explain a substantial amount of the variation of the magnitude with adjusted R2's ranging from 0.45 to 0.57.

Given the strength of the results, I focus more precisely on how much current and past lost status predicts the establishment of the full allowance. If the majority of the decision is explained by those two factors, it supports the contention that managers discount any expectations of future income when recording the allowance.

Figure 2 Panels A-D plots the distribution of the valuation allowance partitioned on whether the firm has an accumulated NOL and a profit in the year immediately prior to IPO. Consistent with expectations, the magnitude of the allowance appears to be highly correlated with those two variables, with NOL firms that report a pre-tax loss showing an almost exclusive clustering around the full allowance.

To show his more explicitly I run the following logit empirical specification:

$$FULLALLOW_t = \alpha_0 + \beta_1 NOLFIRM_t + \beta_2 PROFIT_t + \varepsilon \qquad (3)$$

Where the independent variables are all indicator variables equal to 1 if: the firm reports and NOL carryforward (*NOLFIRM*), or pre-tax profit (*PROFIT*). The basic idea here is to capture whether the decision to record the full allowance is essentially mechanically driven by loss status, regardless of the actual magnitudes or other firm characteristics.[12]

Figure 3 plots the predicted margins from the estimated coefficients of the regression, and it is immediately evident that just having an NOL and current profit status predicts almost the entire likelihood

[12] The results are robust with the inclusion of all other independent variables from equation 1.

of recording a full valuation allowance. NOL firms with a Pre-Tax Loss in the pre-IPO period have a predicted probability of 91%, whereas for profitable firms without an NOL it is less than 1%.

In summary the results indicate that for these IPO firms, the choice is not whether to record any valuation allowance in the pre-IPO period, but whether to record a full allowance. This choice appears to be almost entirely driven by whether the firm has an NOL carryforward, and a pre-tax profit in the year prior to IPO. This is consistent with an auditor approach of ignoring any forward looking information when making the decision to record the allowance.

Signal for future performance.

Table 5 presents the results of the income prediction testing. Panel A shows the results for the full sample, and panel B for only firms that record a valuation allowance (either partial or full). As expected, the magnitude of the allowance sends a strong negative signal for future income across all specifications (coefficient of -0.23 for one year ahead income and -0.29 for three years ahead). The results are also economically significant. For example, a firm that record a full valuation allowance indicates can be expected to, on average, have one-year head income that is 23% lower than firms record a zero allowance. This result is strongly consistent with managers recording the allowance due to concerns over the future deductibility of the NOL. It also provides strong support for usefulness of the pre-IPO financial disclosures in predicting future operating performance.

In untabulated results, I perform several addition specifications to verify the robustness of the result. First, I control for the magnitude of the deferred tax benefit (*NOL/ASSETS)*, in order to verify that the valuation allowance is not simply capturing the fact that firms with large losses have bigger losses in the future. Second, I also include all of the additional operational variables from table 3 in the regression as predictors. Again the valuation allowance is negatively related to future income in all periods. Third, I restrict the sample to firms that remain in operations for at least three years in the future. In all cases I find that the establishment of the full valuation allowance sends a strong negative signal for future income in all periods.

In summary, consistent with the univariate analysis, the full valuation allowance sends a strong negative signal for future performance, incremental to other available information. This incremental information content suggests that even if the decision to record the allowance is predominantly driven by past operating history, its pre-IPO fundamentals are likely to persist.

Full allowance and future delistings

For my final analysis I examine whether the establishment of a full valuation allowance is correlated with one particularly extreme negative outcome – firm failure. Given the fact that these firms have up to 20 years to utilize any carryforwards, a full allowance essentially potentially that their losses will persist far into the future and they will cease operations without generating any profits.

To determine whether a firm fails I examine their CRSP delisting codes. Consistent with Demer and Joos (2006), I define a firm has having failed if the delisting code falls between 400-599, with the exception of codes 501-503 (stopped trading on current exchange to move to NYSE, AMEX, or NASDAQ), or 573 (went private). Table 6 shows the delisting outcomes for the sample based on whether the firm records a full allowance. Panel A for the full sample, panel B for NOL firms only, and panel C for NOL firms with a pre-tax loss in the pre-IPO period.

In all subsamples, the most common outcomes in acquisition (*MERGE)*, with approximately 50% of firms showing that outcome regardless of full allowance decision. Where I find a difference is in whether these firms fail (*FAILURE)* or remain a going concern (*ACTIVE).* For all sub-groups establishment of the full allowance is correlated with a significantly higher likelihood of failure of approximately 10%.[13] This provides further support for the contention that the valuation allowance sends a strong negative signal for future performance.

[13] Unsurprisingly, there is also a correspondingly lower likelihood of remaining active by about 15%. The reason the difference percentage active is larger than the failure difference is that the Full Allowance Firms report a greater number of mergers, though the difference in that outcome is not statistically significant.

6. Conclusion

In this paper I examine the information conveyed by the deferred tax valuation allowance for a sample of venture-capital backed IPO firms. These firms overwhelmingly record a full valuation allowance which is often the largest single accrual on these firms' balance sheet. The full allowance also implies that there is a greater than 50% expectation that the firm will not generate *any* taxable income in the future. I show that that this expectation is largely justified as the Full Allowance firms are significantly more likely to exhibit lower operating performance, and fail in future periods. All of the results suggest that the accounting treatment generally reflects the true fundamentals of the IPO firms.

The results make several contributions to existing research into IPO firm accounting. First, the prevalence of the full allowance calls into question research that IPO firm managers exploit the increased information asymmetry of the IPO to upwardly manage their firms earnings prior to IPO. Second, the strong negative signal sent by the full allowance suggests that the accounting system, and increased scrutiny surrounding the IPO, causes the firms to report the accrual 'correctly.' This is consistent with research suggesting that the increased scrutiny and litigation risk surrounding the IPO causes managers to ignore the incentive to manage earnings (e.g. Ball & Shivakumar 2008), and increases the information content of the valuation allowance.

The study also contributes to the more general research into the valuation allowance by examining the accounting of a group of firms generally ignored by prior literature – IPO firms. The results suggest that the allowance reflects information about these firms' fundamentals, and that the managers do not exploit its inherent discretion to manage future earnings. It also provides strong support to literature contending that income tax disclosures can provide information about the future operations of loss firms.

References

Allen, E.J., Allen, J.C., Raghaven, S. and Solomon, D.H. 2018. On the tax efficiency of startup firms. *Working Paper*.

Armstrong, C.S., Foster, G. and Taylor, D.J. 2009 Earnings management around initial public offerings: A re-exmaination. *Working paper*.

Ball, R., and L. Shivakumar. 2008. Earnings Quality at Initial Public Offerings. *Journal of Accounting and Economics* 45: 324-349.

Bauman, M.P. and Das, S. 2004. Stock Market Valuation of Deferred Tax Assets: Evidence from Internet Firms. *Journal of Business Finance & Accounting.* 31(9)&(10).

Billings, M.B. and Lewis, M.F. 2015. When Does Pre-IPO Financial Reporting Trigger Post-IPO legal Consequences? *Contemporary Accounting Research.* Forthcoming.

Behn, B., T. Eaton, and J. Williams. 1998. The Determinants of the Deferred Tax Allowance under SFAS No. 109. *Accounting Horizons* 12 (1): 63-78.

Chen, S.S., Lin, W.C., Chang, S.C., and Lin, C.Y. 2013. Information uncertainty, Earnings management, and Long-Run Stock Performance Following Initial Public Offerings. *Journal of Business Finance and Accounting* 40(9) & (10) 1126-1154.

Christensen, T., G. Paik, and E. Stice. 2008. Creating a Bigger Bath Using the Deferred Tax Valuation Allowance. *Journal of Business Finance and Accounting* 35(5) & (6): 601-625.

Cohen, B.D. and Dean, T.J. 2005. Information Asymmetry and Investor Valuation of IPOs: Top Management Team Legitimacy as a Capital Market Signal. *Strategic Management Journal.* 26: 683-690.

Demers, E. and Joos, P. 2007. IPO Failure Risk. *Journal of Accounting Research* 45(2):333-372

Dhaliwal, D., Kaplan S.E., Laux, R.C. and Weisbrod, E. 2013. The Information Content of Tax Expense for Firms Reporting Losses. *Journal of Accounting Research* 51(1) 135-164

Ertimur, Y., Sletten, E., Sunder, J. and Weber, J. 2017. When and Why do IPO Firms Manage Earnings? *Working Paper*.

Fedyk, T., Singer, Z., and Soliman, S. 2016. The Sharpest Tool in the Tool Shed: An Examination of Financial Statement Management Tools During IPOs. *Review of Accounting Studies.*

Frank, M. M. and S.O. Rego. 2006. Do Managers Use the Valuation Allowance Account to Manage Earnings Around Certain Earnings Targets? *Journal of the American Taxation Association* 28 (1): 43-65.

Hanlon, M. S. Heitzman. (2010). A Review of Tax Research. *Journal of Accounting and Economics* 50: 127-178.

Jain, B.A. and Kini, O. 1994. The post-issue operating performance of IPO firms. *The Journal of Finance* 49(5) 1699-1726

Jain, B.A. and Kini, O. 2000. Does the presence of venture capitalists improve the survival profile of IPO firms? *Journal of Business Finance and Accounting* 27(9) & (10) 1139-1176

Jung, D.J. and D. Pulliam. 2006. Predictive Ability of the Valuation Allowance for Deferred Tax Assets. *Academy of Accounting and Financial Studies Journal* 10 (2): 49-70.

Lewis, M.F. 2008. When are IPO Firms' Income-Increasing Accruals Informative? *Working Paper*.

Kim, M. and Ritter, J.R. 1999. Valuing IPOs. *Journal of Financial Economics* 53(3) 409-437.

Miller, G. S. and D.J. Skinner. 1998. Determinants of the Valuation Allowance for Deferred Tax Assets under SFAS No. 109. *The Accounting Review* 73 (2): 213-233.

Puri, M. and Zarutski, R. 2012. On the Life-Cycle Dynamics of Venture Capital and Non-Venture Capital Financed Firms. The Journal of Finance.

Morse, S. and Allen, E. 2016. *Innovation and Taxation at Startup firms.* Tax Law Review.

Morsfield, S.G. and Tan, C.E.L. 2006. Do Venture Capitalists Influence the Decision to Manage Earnings in Initial Public Offerings. *The Accounting Review.* 81(5): 1119-1150.

Ritter, J.R. and Welch, I. 2002. A review of IPO activity, Pricing, and Allocations. *The Journal of Finance* LVII (4) 1795-1828

Teoh, S., T. Wong and G. Rao. 1998a. Are Accruals during Initial Public Offerings Opportunistic?. *Review of Accounting Studies* 3: 175-208.

Teoh, S., I. Welch and T. Wong. 1998b. Earnings Management and the Long-Run Market Performance of Initial Public Offerings. *The Journal of Finance* LIII (6): 1935-1974.

Venkataraman, R., J. Weber and M. Willenborg. 2008. Litigation Risk, Audit Quality, and Audit Fees: Evidence from Initial Public Offerings. *The Accounting Review* 83 (5): 1315-1345.

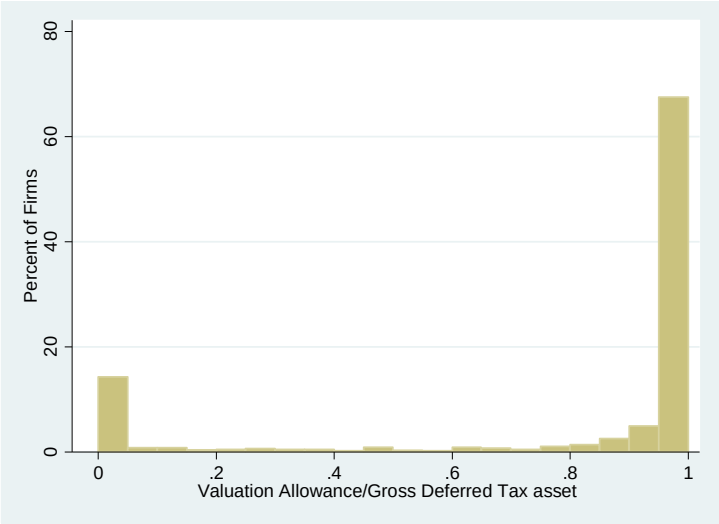
Appendix: Variable Names, Definition, and Source

Variable Name	Definition	Source
Deferred Tax Variables		
VALALLOW	Deferred tax Valuation Allowance	Prospectus
NOLFIRM	Indicator variable equal to 1 if *NOL* > 0 and zero otherwise	Prospectus
NOL	Portion of the deferred Tax Asset attributable to the NOL carryforward	Prospectus
DTL	Deferred Tax Liability	Prospectus
DTLPRES	Indicator variable equal to 1 if *DTL* > 0 and zero otherwise	Prospectus
DTA	Deferred tax Asset	Prospectus
ALLOWANCE	Indicator variable equal to 1 if *VALALLOW*> 0 and zero otherwise.	Prospectus
FULLALLOW	Indicator variable equal to 1 if the firm records a valuation allowance completely zeroing out the net deferred tax asset, and zero otherwise	Prospectus
Other Financial variables		
ASSETS	Ending Total Assets (AT)	COMPUSTAT
PROFIT	Indicator variable equal to 1 if pre-tax income (PI) > 0 and zero otherwise	COMPUSTAT
ROA	Pre-tax Income (PI)/Assets	COMPUSTAT
READJ	Ending retained earnings (RE) - *DTA* + *DTL* + *VALALLOW*- Net Income (NI) + Treasury Stock (TSTK)	COMPUSTAT and Prospectus
NEGRE	Indicator variable equal to 1 if *READJ* < 0 and zero otherwise	COMPUSTAT
Delisting Outcomes		
ACTIVE	Delist code between 100 and 199	CRSP
MERGE	Delist code between 200 and 299	CRSP
FAILURE	Delist code between 400 and 599, with the exception of 501-503 and 573	CRSP
Other Variables		
INDUST	2-digit SIC code (SICH)	COMPUSTAT
YEAR	Calendar year of last audited fiscal year prior to the IPO date.	Prospectus

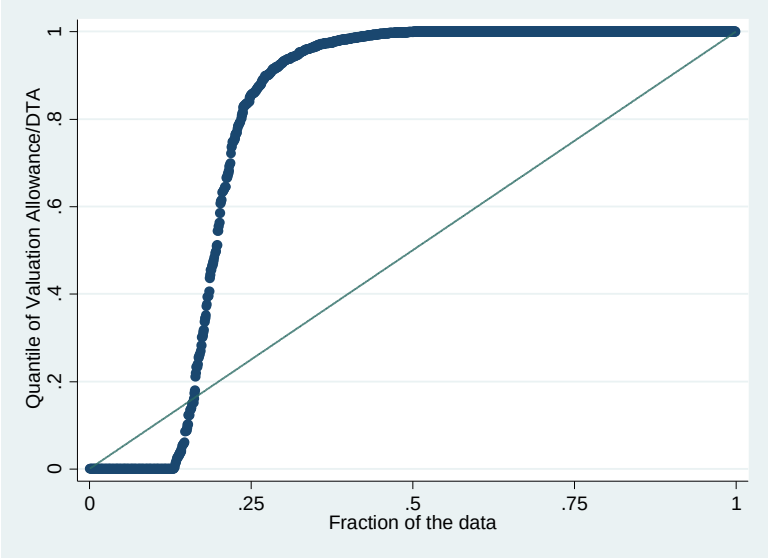
COMPUSTAT variable name in (CAPS).

Figure 1: Distribution of the magnitude of the deferred tax valuation allowance divided by the gross deferred tax asset.

Panel A: Histogram (N = 1,217)



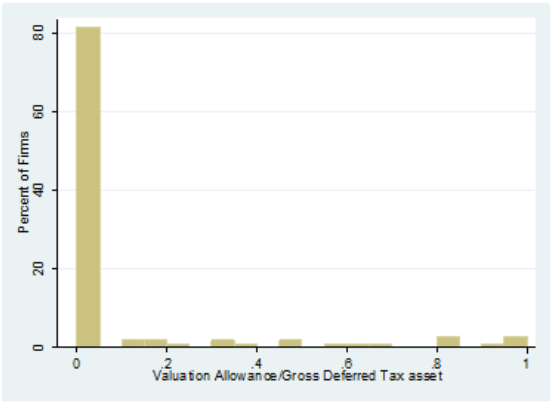
Panel B: Q-Q Plot



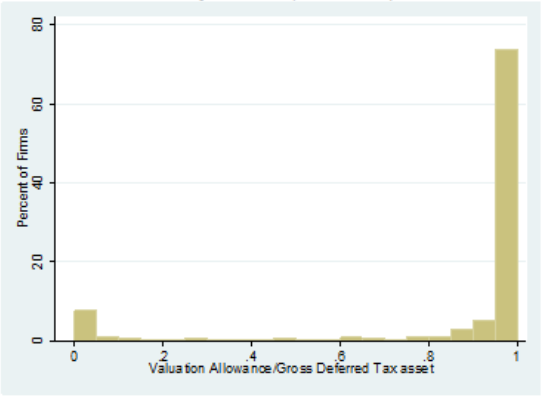
See section 4 for sample construction, and the appendix for variable names. This figure plots the frequency distribution and Q-Q of the deferred tax valuation allowance (*VALALLOW)* divided by the gross deferred tax asset (*DTA)*. The variable is winsorized to be between 0 and 100%.

Figure 2: Distribution of the magnitude of the deferred tax valuation allowance divided by the gross deferred tax asset partitioned on whether the firm reports an NOL carryforward and Pre-Tax Profit.

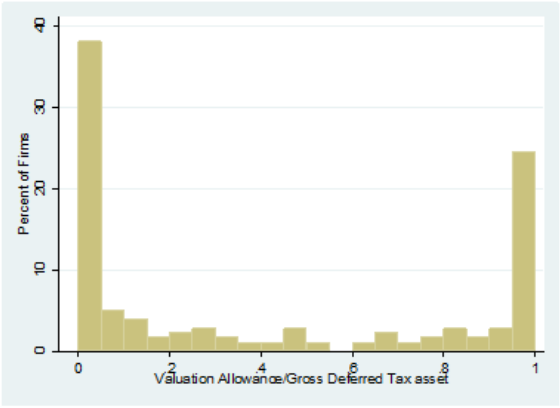
Panel A: No NOL carryforward (N = 109)



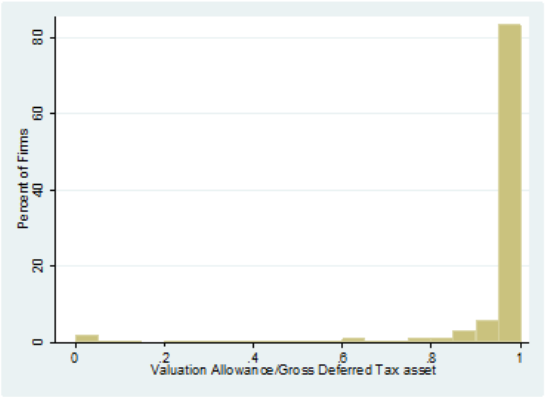
Panel B: NOL Carryforward (N = 1,109)



Panel C: NOL Carryforward, and Pre-tax Profit (N = 176)

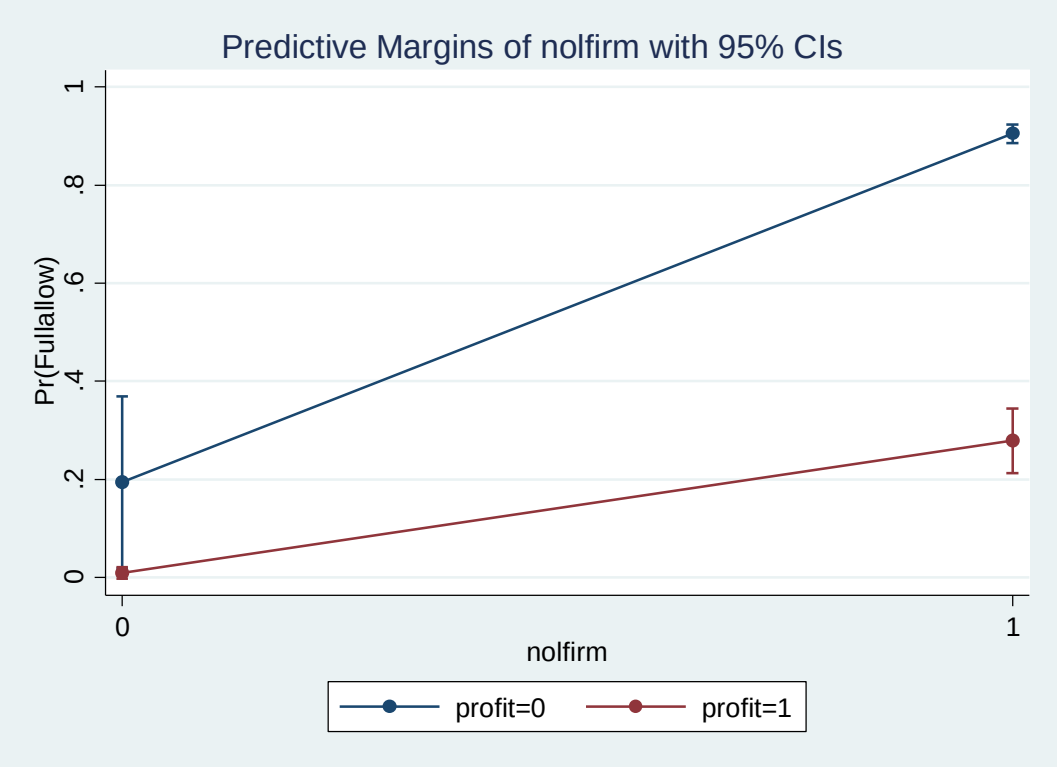


Panel D: NOL Carryforward, and Pre-Tax Loss (N = 933)



See section 4 for sample construction, and the appendix for variable names. This figure plots the frequency distribution of the deferred tax valuation allowance (*VALALLOW)* divided by the gross deferred tax asset (*DTA)*. The variable is winsorized to be between 0 and 100%. Panel A shows the distribution for firms with no NOL carryforward (*NOL* = 0*)*. Panel B firms with an NOL carryforward (*NOL* = 1). Panel C firms with an NOL carryforward (*NOL* =1) and pre-tax profit (*PROFIT* = 1). Panel D firms with an NOL carryforward (*NOL* = 1) and pre-tax loss (*PROFIT* = 0).

Figure 3: Predicted probability of recording a deferred tax valuation allowance that completely offsets the net-deferred tax asset based on whether the firm reports an NOL carry-forward and pre-tax profit.



See section 4 for sample construction, and the appendix for variable names. This figure shows the predicted probability of a firm recording a 'full' valuation allowance (*FULLALLOW* =1) based on whether it reports and NOL carryforward (*NOLFIRM* = 1) and pre-tax profit (*PROFIT* = 1). The predicted probability is calculated using coefficients from the following logit regression:

$$FULLALLOW_t = \alpha_0 + \beta_1 NOLFIRM_t + \beta_2 PROFIT_t + \varepsilon$$

Table 1: Descriptive statistics for the full sample, and partitioned on whether the firm records a 'full' valuation allowance

Panel A: Full Sample

Variable	Mean	STD	Min	p25	median	p75	max
NOLFIRM	0.91	0.28					
PROFIT	0.22	0.41					
NOL/DTA	0.65	0.31	0.00	0.48	0.76	0.88	1.00
NOL/ASSETS	0.58	1.59	0.00	0.06	0.26	0.57	35.46
ALLOWANCE	0.87	0.34					
VALALLOW/ASSETS	0.73	1.98	0.00	0.08	0.35	0.73	40.31
ASSETS	68.24	135.10	0.85	13.53	28.00	62.33	980.20

Panel B: Partitioned on whether the firm records a full valuation allowance

	FULLALLOW =		
Variable	**0**	**1**	**Diff***
General charactersitics			
NOLFIRM	0.66	0.99	0.34
	(0.48)	(0.07)	
PROFIT	0.71	0.06	-0.64
	(0.46)	(0.24)	
DTLPRES	0.78	0.33	-0.45
	(0.42)	(0.47)	
NEGRE	0.74	0.99	0.25
	(0.44)	(0.12)	
Deferred Tax Variables			
VALALLOW/DTA	0.29	0.97	0.68
	(0.39)	(0.10)	
NOL/DTA	0.34	0.74	0.40
	(0.34)	(0.22)	
DTL/DTA	0.70	0.03	-0.67
	(1.34)	(0.11)	

Operational characteristics			
ln(ASSETS)	4.18	3.09	-1.09
	(1.33)	(1.12)	
READJ/ASSETS	-0.42	-1.71	-1.28
	(1.16)	(2.63)	
ROA	0.00	-0.73	-0.73
	(0.31)	(0.85)	
ROA_{t+1}	0.02	-0.29	-0.31
	(0.17)	(0.34)	
ROA_{t+2}	-0.02	-0.46	-0.44
	(0.30)	(0.62)	
ROA_{t+3}	-0.07	-0.59	-0.52
	(0.48)	(0.87)	
N	320	897	

***All means are significantly different at the 5% level.**
See section 4 for sample construction, and the appendix for variable definitions. Unless noted otherwise, all variables are reported as of year t – the last audited fiscal year prior to IPO. All continuous variables are winsorized at the 1% an 99% level except for (VALALLOW/DTA) and (NOL/DTA). Those are winsorized to be between 0 and 100%.

Table 4: OLS regression of the magnitude of the deferred tax valuation allowance on the magnitude of the deferred tax liability, deferred tax benefit from the NOL carry-forward, pre-tax return on assets, and adjusted retained earnings.

	Dependent Variable = VALALLOW/DTA		
	(1)	(2)	(3)
Independent Variable			
DTL/DTA	-0.13***	-0.20***	-0.04***
	(0.02)	(0.04)	(0.02)
NOL/DTA	0.56***	0.28***	0.45***
	(0.03)	(0.04)	(0.07)
ROA	-0.06***	-0.02***	-0.31***
	(0.01)	(0.01)	(0.07)
READJ/AT	0.00	-0.00**	-0.01
	(0.00)	(0.00)	(0.02)
Industry Dummy	yes	yes	yes
Year Dummy	yes	yes	yes
N	1,217	1,057	320
Adj R2	0.57	0.44	0.45

*****,**,* - significantly different from zero at the 1,5, 10% level.**

See section 4 for sample construction, and the appendix for variable definitions. Unless noted otherwise, all variables are reported as of year t – the last audited fiscal year prior to IPO. All continuous variables are winsorized at the 1% an 99% level except for (VALALLOW/DTA) and (NOL/DTA). Those are winsorized to be between 0 and 100%.

This table shows the results from the following OLS regression with Robust standard errors.

$$(VALALLOW/DTA)_t = \alpha_0 + \beta_1(DTL/DTA)_t + \beta_2(NOL/DTA)_t + \beta_3 ROA_t + \beta_4 READJ_t + \beta_k INDUST + \beta_j YEAR + \varepsilon_t$$

Column 1 includes the full sample. Column 2 removes firms that record no valuation allowance (*VALALLOW* = 0). Column 3 restricts the sample to firms that do not record a full valuation allowance (*FULLALLOW* = 1).

Table 5: OLS Regression of future ROA on current ROA, magnitude of the deferred tax valuation allowance divided by gross deferred tax assets, total assets, and industry and year controls.

Panel A: Full Sample

	Dependent Variable		
	ROAt+1	ROAt+2	ROAt+3
Independent Variable			
VALALLOW/DTA	-0.23***	-0.32***	-0.29***
	(0.02)	(0.03)	(0.07)
ROA	0.15***	0.13***	0.10**
	(0.02)	(0.03)	(0.04)
LN(ASSETS)	-0.01	0.04*	0.08**
	(0.01)	(0.02)	(0.03)
Intercept	-0.02	-0.74***	-0.91***
	(0.06)	(0.10)	(0.17)
Industry Dummies	yes	yes	yes
Year Dummies	yes	yes	yes
N	1,217	1,124	997
Adj R2	0.33	0.20	0.21

Panel B: Only firms that record a valuation allowance.

	Dependent Variable		
	ROAt+1	ROAt+2	ROAt+3
VALALLOW/DTA	-0.28***	-0.37***	-0.41***
All Other Controls	Yes	Yes	Yes
	(0.04)	(0.06)	(0.09)
N	1,057	972	857
Adj R2	0.26	0.14	0.18

*****,**,* - significantly different from zero at the 1,5, 10% level.**

See section 4 for sample construction, and the appendix for variable definitions. Unless noted otherwise, all variables are reported as of year t – the last audited fiscal year prior to IPO. All continuous variables are winsorized at the 1% an 99% level except for (VALALLOW/DTA) and (NOL/DTA). Those are winsorized to be between 0 and 100%. All independent variables are measured as of year t- the last fiscal year prior to IPO.

This table shows the results from the following OLS regression with robust standard errors.

$$ROA_{t+k} = \alpha_0 + \beta_1 \left(\frac{VALALLOW}{DTA}\right)_t + \beta_2 ROA_t + \beta_3 \ln(ASSETS_t) + \beta_k INDUST + \beta_j YEAR + \varepsilon$$

Panel A shows the results for the full sample, and Panel B removes firms that record a zero valuation allowance (*VALALLOW* = 0).

Table 6: Future delisting outcomes partitioned on whether the firm record a 'full' valuation allowance.

Panel A: Full Sample

	FULLALLOW =			
Outcome	**0**	**1**	**Diff**	
Active	37%	24%	-12%	***
Merge	50%	51%	1%	
Failure	13%	24%	10%	***
N	320	897		

Panel B: Firms with an NOL Carryforward.

	FULLALLOW =			
Outcome	**0**	**1**	**Diff**	
Active	39%	24%	-15%	***
Merge	48%	51%	3%	
Failure	13%	24%	11%	***
N	216	893		

Panel C: Firms with an NOL Carryforward and pre-tax loss.

	FULLALLOW =			
Outcome	**0**	**1**	**Diff**	
Active	40%	23%	-17%	***
Merge	47%	52%	6%	
Failure	14%	24%	11%	*
N	88	845		

*****,**,* - significantly different at the 1,5, 10% level.**

See section 4 for sample construction, and the appendix for variable definitions. This figure reports the delisting outcomes as of 12/31/2017 from the CRSP delisting database. Each panel partitions the sample based on whether the firm records a deferred tax valuation allowance completely zeroing out the net deferred tax asset (*FULLALLOW* = 1). Panel A reports the full sample. Panel B removes firms that do not report an NOL carryforward (*NOLFIRM* = 0). Panel C removes firms that do not report an NOL carryforward (*NOLFIRM* = 0) and report a pre-tax profit (*PROFIT* = 1).